WHAT IS CLAIMED IS:

1. A method for manufacturing a zinc oxide semiconductor, comprising the steps of:

forming a zinc oxide thin film including a group V element as a dopant on a substrate by using a zinc oxide compound containing a group V element or an oxide thereof;

charging the substrate having the zinc oxide thin film formed thereon into a chamber for thermal annealing; and

thermal annealing the substrate in the chamber to activate the dopant, thereby changing the zinc oxide thin film exhibiting n-type electrical properties or insulator properties to a zinc oxide thin film exhibiting p-type electrical properties.

2. The method for manufacturing a zinc oxide semiconductor according to claim 1, wherein the zinc oxide thin film is formed by using a method selected from sputtering, MOCVD and MBE.

3. The method for manufacturing a zinc oxide semiconductor according to claim 1, wherein the substrate is made of silicon, zinc oxide or sapphire.

4. The method for manufacturing a zinc oxide

semiconductor according to claim 1, wherein the dopant is a pure element of group V including phosphorus, arsenic, antimony or bismuth or oxide form thereof.

5. The method for manufacturing a zinc oxide semiconductor according to claim 1, wherein the zinc oxide thin film is formed by using zinc oxide containing 0.001~20% by weight of phosphorous oxide as a target in accordance with RF magnetron sputtering.

6. The method for manufacturing a zinc oxide semiconductor according to claim 1, wherein the zinc oxide thin film is formed by subjecting the zinc oxide compound to plasma.

7. The method for manufacturing a zinc oxide semiconductor according to claim 1, wherein the thermal annealing is carried out by raising the inner temperature of the chamber at a rate of 0.1~100℃ per second, and maintaining the temperature at 500~1,500℃ for 10 seconds ~ 30 minutes.

8. The method for manufacturing a zinc oxide semiconductor according to claim 1, wherein the thermal annealing is carried out under nitrogen or inert gas atmosphere.